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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,580	07/21/2003	Scott B. Herner	MA-040-a	7514

33971 7590 09/14/2005

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EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,580	HERNER ET AL.	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7-14* is/are allowed.

6)☒ Claim(s) *1-6 and 15-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment/Argument

1. Applicant's arguments, filed 7/14/2005 with respect to the rejection(s) of claims 20-23 under Obvious-type Double Patenting have been fully considered and are persuasive. The rejections have been withdrawn. Applicant's arguments, filed 7/14/2005, with respect to the rejection(s) of claims 7, 8, 10-12, 15-18 under Obvious-type Double Patenting have been fully considered and are persuasive. The rejection(s) have been withdrawn. Applicant's arguments, filed 7/14/2005, with respect to the rejection(s) of claim 4 under Obvious-type Double Patenting have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of Obvious-type Double Patenting rejection is made in view of Hsu (US 6,613,626). Applicant's arguments, filed 7/14/2005, with respect to the rejection(s) of claims 1-3, 5, 15-18, 20-23, 25-28, 30-31 under U.S.C 102(e) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Su (US 5,837,582)

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,635,556 in view of Hsu (US 5,613,626)

Claim 1 of US 6,635,556 meets all the limitations of the instant claimed inventions as per claim 4 except the limitation of removing the undoped silicon capping layer. Hsu discloses a method for forming a CMOS comprises the step of removing an undoped silicon capping layer 46 (col 6, lines 41-46, fig. 9)

One skilled in the art at the time the invention was made would have found it obvious to modify claim 1 of US 6,635,556 by adding the step of removing the undoped silicon capping layer as per Hsu because Hsu discloses that polysilicon needs to be removed by CMP (col 6, lines 46-48)

Claims 19, 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,635,556. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of claim 1 of US 6,635,556 encompasses the scopes of claims 19, 24 of the instant claimed invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-5, 25, 27-28, 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Su et al (US 5,837,582)

Su discloses a method for forming HSG silicon layer comprises the steps of:

forming a first in-situ doped silicon layer 10 over a substrate material 9 in a LPCVD chamber/pressure chamber while flowing phosphine/precursor gas (col 3, lines 59-62)

forming an undoped polysilicon capping layer 11B on and in contact with layer 10/doped silicon layer without removing the substrate from the chamber and without flowing phosphine/discontinuing precursor gas (col 3, lines 66-67; fig. 3)

etching/removing the undoped capping layer 11B (col 4, lines 36-37; fig. 5)

Su also discloses using the invention to manufacture DRAM device/memory device (col 1, lines 66-65)

The limitations of claims 4-5, 27 have been discussed above

Regarding claims 3, 28, Su discloses forming a doped silicon layer 12/second in-situ doped silicon layer (col 4, lines 4-6)

Regarding claim 30, fig. 3 of Su shows that layer 10/first doped layer is thicker than undoped capping layer 11B.

Regarding claim 31, Su discloses that undoped layer 11B having a thickness of 300-500 angstroms (col 4, lines 1-2)

5. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Su (US 5,837,582)

Su discloses a method for forming HSG silicon layer comprises the steps of:

forming a first in-situ doped silicon layer 10 over a substrate material 9 in a LPCVD chamber/pressure chamber while flowing phosphine/precursor gas (col 3, lines 59-62)

forming an undoped polysilicon capping layer 11B on and in contact with layer 10/doped silicon layer without removing the substrate from the chamber and without flowing phosphine/discontinuing precursor gas (col 3, lines 66-67; fig. 3)

etching/removing the undoped capping layer 11B (col 4, lines 36-37; fig. 5)

Su also discloses using the invention to manufacture DRAM device/memory device (col 1, lines 66-65)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 6, 16-18, 20-23, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su (US 5,837,582) in view of Hill (US 6,384,466)

Su's method has been described above. Unlike the instant claimed inventions as per claims 6, 16, 20, 29, Su fails to specifically disclose forming a three dimension memory array from the transistor/ memory device

Hill discloses a method for forming multi-layer dielectric comprises the step of specifically disclose forming a memory array from the transistor/ memory device having the dielectric layers (col 3, lines 24-30)

One skilled in the art at the time the invention was made would have found it obvious to employ Su transistor/memory device to form a three dimension memory array in view of Hill teaching because Hills discloses that an assembly includes a number of structure covered with a multi-layer dielectric can be a portion of a memory array (col 3, lines 24-30)

Regarding claims 17-18, 21-22, fig. 3 of Su shows that layer 10/first doped layer is thicker than undoped capping layer 11B. Su discloses that undoped layer 11B having a thickness of 300-500 angstroms (col 4, lines 1-2)

Regarding claim 23, Su discloses forming a doped silicon layer 12/second in-situ doped silicon layer in contact with layer 11 B (col 4, lines 4-6)

8. Claims 2, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su (US 5,837,582) in view of Hsu (US 6,613,626)

Su's method has been described above. Unlike the instant claimed inventions as per claims 2, 26, Su fails to specifically disclose removing the undoped polysilicon capping layer by CMP

Hsu discloses a method for forming a CMOS comprises the step of removing the undoped polysilicon layer by CMP (col 6, lines 42-47)

One skilled in the art at the time the invention was made would have found it obvious to modify Su method by removing the undoped polysilicon layer by CMP as per Hsu because Hsu discloses that polysilicon needs to be removed by CMP (col 6, lines 46-47)

Allowable Subject Matter

9. Claims 7-14 allowed.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
September 12, 2005